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ABSTRACT

This study investigated the reading styles of 57 students in grades 3, 4, and 5. Special attention was given to the independent variables gender, grade level, and at-risk status. A total of 224 comparisons were made from which 8 main effects were observed: (1) females reported greater preference for music while reading than males; (2) special education students reported greater preference for bright light when reading than did Title 1/tutor students; (3) males reported greater preference for choices of reading material than females; (4) students in grade 4 reported greater preference for choices of reading material than students in grade 3; (5) students in grades 3 and 4 reported greater preference for directions than students in grade 5; (6) males reported greater preference for having work checked frequently than females; (7) regular education and special education students reported a greater preference for having work checked by peers than students in Title 1/tutor; and (8) students in grade 5 reported a greater preference for mobility than students in grades 3 and 4. It appeared that no one element of learning style was the contributing factor to improved academic achievement. Other results are also reported. Appendices present copies of correspondence, a demographic data sheet, and an instructions sheet. Contains 20 references. (RJM)

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ED 404 608

READING STYLES PREFERENCES OF THIRD, FOURTH AND FIFTH GRADE STUDENTS

being

A Thesis Presented to the Graduate Faculty

of the Fort Hays State University in

Partial Fulfillment of the Requirements for

the Degree of Master of Science

by

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Abstract

The purpose of the researcher was to investigate the reading styles of third, fourth, and fifth grade students. The independent variables investigated were gender, grade level, and at-risk status. The dependent variables consisted of scores from the Reading Styles Inventory- Intermediate. The sample was from an elementary school in McPherson County servicing students in the Rice County and McPherson County area around Little River and Windom. The sample consisted of 57 students in grades 3, 4, and 5, 24 females and 33 males. One composite null hypothesis was tested employing analysis of variance (general linear model) using a 2X3X3 factorial design.

A total of 224 comparisons were made. Of the 224 comparisons, 96 were main effects and 128 were interactions. Of the 96 main effects, 9 were statisticall significant at the .05 level. Of the 128 interactions 6 were statistically significant at the .05 level.

The results of the present study appeared to support the following generalizations:

1. female students have greater preference for music while reading than males,
2. male students have a greater preference for choices in

reading than females,

3. students in fourth grade have greater preference for directions than students in grade 5,
4. grade level and at-risk status of students should be interpreted concurrently for light preference while reading,
6. grade level and at-risk status of students should be interpreted concurrently for adult-motivated preference,
7. gender and at-risk status for students should be interpreted concurrently for preference in the frequency of work checked,
8. gender and grade level for students should be interpreted concurrently for preference of work checked by whom,
9. gender and at-risk status for students should be interpreted concurrently for preference of work checked by whom, and
10. the gender and grade level for students should be interpreted concurrently for mobility preference.

Introduction

Overview

Walking into a classroom, it can be observed that not all children learn in the same way or complete tasks in the same manner or arrive at solutions to a problem using the same processes. Different types of activities engage students to varying degrees. Some students grasp new concepts and processes when presented one way while other students are confused or slower to understand the same presentation. Individuals appear to have their own strengths and preferences as to how they learn. Spinner (1992) stated that "there are many types and styles of learning, and individuals learn more rapidly when their learning styles are well-suited to the way they receive and process information" (p. 8). Carbo (1990) maintained that "repeated exposure to the correct reading methods and interesting, well-written books is the fastest way to reach high standards of literacy in our classrooms. Matching their instruction to their reading styles also helps students enjoy reading" (pp. 27-28).

Spinner (1992) maintained the following:

> The way people learn is a totally individualized process that seems to have little to do with age, sex, race, intelligence, or

> income. Rather our learning is reflected in the way we respond to environmental, sociological, emotional, physical, and psychological stimuli. (p. 9)

Glasner and Ingham (1992) stated:

> We can no longer, then, assume that everyone learns through whatever method the teachers or school system prefers to use. We must identify and adopt an approach to instruction which recognizes and values the uniqueness of each student, each instructor, each person. (p. 218)

Learning style is one way to address the individual needs and preferences of students. Learning style has been defined in a variety of manners. De Bello (1990) offered a generic definition of learning style as "the way people absorb, process, and retain information" (p. 204). Glasner and Ingham (1992) described learning style as "a combination of physical, emotional and cognitive characteristics which determine how each person learns best" (p. 218). O'Neil (1990) cited Keefe's definition of learning styles; "characteristic cognitive, affective, and physiological behaviors that serve as relatively stable indicators of how learners perceive, interact, and respond to the learning environment" (p. 5). Dunn (1990) defined learning style as "the way each learner begins to concentrate, process, and retain new and difficult information" (p. 224). Carbo

(1991) focused upon reading styles, "an individual's learning style when he/she reads" (p. 5). She developed the Reading Styles Inventory based upon Dunn's model of learning style (Carbo, 1991, DeBello, 1990).

Effects of Matching or Mismatching Elements of Style on Learning

Carbo (1990) maintained that "not all learning problems will disappear when individual reading styles are accommodated, but we create unnecessary learning problems when we don't" (p. 28). Carbo (1987b) reported the following:

> During our four years of matching instructional approaches to children's reading styles, my colleagues and I saw students make better-than-average gains in reading, enjoy learning to read, and develop better self-concepts -- even though these youngsters had previously been labeled "emotionally disturbed," "learning disabled," or "poor readers." (p. 433)

Della Valle, et al, (1986) conducted a study on the effects of matching and mismatching junior high students' mobility preferences on their ability to respond accurately to memory tasks. Students were asked to briefly look at word pairs in an environment which required no mobility and in an environment where it was necessary to move from station to station and manipulate word cards. Following the observation the students took a test where

they were required to identify word pairs they had previously seen. In the researcher's analysis, neither the subjects' gender, expressed preference for mobility, nor the environment, be it active or passive, appeared to have caused an interaction. Significant improvement ($p < .001$) of test scores on matching word pairs occurred only when the students' expressed preference for mobility was matched to the learning environment.

Virostko (1983) examined the relationships among class instructional schedules, time preferences, and grade level, and their effect on mathematics and reading achievement test scores of third, fourth, fifth, and sixth grade students. The researcher determined the students' time preferences and whether their instructional schedules were matched or mismatched. Virostko found that students whose time preference were matched scored higher than those who were mismatched. The investigation showed matching instructional schedules to time preferences were the most significant factors responsible for increasing test scores in reading and mathematics at the $p=.001$ level of confidence.

In Carns and Carns' (1991) study involving study skills and learning styles, the counselor met with fourth graders in an individual conference to review the student's attendance, annual grade averages, and standardized test scores and then guided the

student to prescribe his or her own plan for improvement. A study skills unit was then taught to the group of students. A portion of the unit presented the students with elements of learning style including environmental, emotional, sociological and physical. Students diagnosed their learning style preferences and appropriate strategies for the preferences were taught. The researchers then used pretest and post test mean grade equivalent scores on the California Test of Basic Skills given a year apart to assess the effectiveness of the study skills program. They found the fourth graders who participated in the study skills class emphasizing learning style preference and appropriate study skills within those contexts showed improvement greater than would be expected in a one year interval on all sub tests of the California Test of Basic Skills. (Improvement on total battery averaged 3 years 1 month grade equivalents.)

Hill (1988) investigated the effects of matching modality preferences of upper-elementary learning disabled students to the related instructional mode for teaching spelling. He found when those with a high preference for auditory stimuli were matched with auditory instructional methods, significant gains in spelling mastery occurred. He also found high-preference visual learners demonstrated significant gains from tactual/kinesthetic treatment.

He concluded that although no one teaching method is consistently more effective with learning disabled students when modality is not considered, learning disabled students benefit from matching modality preference to instructional methods.

Pizzo (1981) investigated the relationship between acoustic environments and preference for sound on reading achievement and attitudes of sixth grade students. She placed some students in environments which were congruent with their sound preference and others in environments which were incongruent to their sound preference. The mean comprehension and attitude scores were significantly higher (beyond the $p=.01$ level) for those who were placed in an environment congruent to their sound preference than those who were placed in an environment incongruent to their preference.

Krimsky (1982) studied the effects of matching and mismatching fourth-grade students' preference for bright or dim light on their reading speed and accuracy scores. He found that both reading speed and accuracy scores were significantly higher for students who were matched to their preference for lighting. He found no significant differences between scores for those preferring bright light and those preferring dim light indicating that it was the matching of preference for lighting that had increased the reading

speed and accuracy.

Reading Styles and Gender

While investigating the effects of birth order and learning styles of 203 middle school students, Cohen (1986) found trends in the learning styles of boys and girls. She found that girls tended to prefer less formal design of learning environment, middle school girls tended to be more responsible about school work, and boys tended to be more mobile in their learning style.

When studying the learning style preferences of students with learning disabilities and students who were gifted, Yong and McIntyre (1992) found significant gender differences in the preference for mobility. Using mean scores and Tukey analysis, the results of their study indicated males had a higher need for mobility than females.

Reading Styles and Grade Specific Tendencies

Carbo (1983) studied reading styles of second, fourth, sixth, and eighth graders. Using a sample of 293 students she found significant reading style differences between students in the different grades. Applying a two-way analysis of variance she reported the following significant preference differences between second graders as compared to the preferences of fourth, sixth, and eighth graders (p. 57):

Grades 4, 6, and 8 are significantly less teacher-motivated than grade 2. (p= .001) Grade 2 is significantly more self-motivated than grades 4, 6, and 8. (p= .001) Grades 2 and 4 prefer significantly fewer choices of reading material than grades 6 and 8. (p= .001) Grade 2 prefers significantly more direction than grades 4, 6, and 8. (p= .001) Grades 6 and 8 prefer to read with adults significantly less than grade 2. (p= .001) Grades 4, 6, and 8 prefer to read with peers significantly more than grade 2. (p= .001) Grade 2 prefers to read alone significantly less than grades 4, 6, and 8. (p= .001) Grades 6 and 8 prefer to read with an adult and peers significantly less than grade 2. In the case of grade 6, their preference is significantly less than grade 4 as well. (p= .001) Grade 2 has significantly less auditory strength than grades 4, 6, and 8; grade 4 has significantly less auditory strength than grades 6 and 8. (p= .001) Grade 2 has significantly less visual strength than grades 4, 6, and 8; grade 4 has significantly less visual strength than grades 6 and 8. (p= .001) Grades 4, 6, and 8 prefer tactual stimuli significantly less those in grade 2. (p= .001) Grades 6 and 8 prefer kinesthetic stimuli significantly less those in grade 2 and 4. (p= .001) Grade 2 prefers intake significantly more than grades 4, 6, and 8. (p=

.002) Grade 6 prefers to learn early in the morning significantly less than grade 2. (p= .002) Grade 6 prefers to read in late afternoon significantly less than grade 2. (p= .001) Grade 2 prefers to read in the evening significantly less than grades 6 and 8. (p= .001) Grade 2 needs mobility significantly more than grades 4, 6, and 8. (p= .001)

Carbo, (1987a,1987b) reported that primary students tend to be global/tactile/kinesthetic learners who need to learn to read with holistic reading methods.

Reading Styles and Tendencies of the At-Risk

Hill (1988) found "learning disabled students expressed a variety of modality preferences, but they were skewed in the following descending order: kinesthetic, tactual, auditory, and visual" (p. 2536A). Carbo (1987a) asserted that results of investigations indicated that poor readers were found to be strong global/tactile/kinesthetic readers and weak auditory and visual readers. Carbo and Hodges (1988) contended that compared to achievers, at-risk students tend to be less visual and auditory and have higher preferences for tactile/kinesthetic stimuli. They require more mobility and intake of food or drink while studying. At-risk students tend to be less motivated than achievers or strongly adult-motivated. They learn best with an adult or with

peers and tend to be most alert during the late morning or early afternoon hours.

Price, Dunn, and Sanders (1981) studied elementary students in grades 3 and 6. The students were given the Dunn, Dunn, and Price Learning Style Inventory and the New York State's Pupil Evaluation Program in Reading to determine reading ability which was then used to classify the students as having high reading achievement or low reading achievement. The researchers found that individuals with high reading achievement tended to prefer studying in a dimly lit, formal environment, were self rather than adult motivated, were persistent and responsible, did not require food intake while studying, did not function best in late morning, required opportunities for mobility, and did not prefer to learn through their tactile and kinesthetic senses. Individuals with low reading achievement tended to prefer a brightly lit, informal environment, were adult rather than self motivated, functioned best in the late morning, did not require mobility, and preferred their tactile and kinesthetic senses.

Yong and McIntyre (1992) compared learning disabled high school students to gifted high school students and their results supported previous studies of the learning disabled. They found learning disabled students tended to prefer formal design, studying

during late morning, and were less motivated ($p < .0001$), persistent ($p < .0001$), and responsible ($p < .01$) than their peers who were gifted. The researchers found the learning disabled in their study to be more auditory learners than visual.

Summary

A consistent finding in the research pertaining to learning styles and reading styles is that differences in individual learning or reading styles exist. No one modality preference or style preference appeared to be the contributing factor to improved academic achievement. Most researchers contended that improvement in an academic area was brought about when individual strengths or preferences were congruent with instructional methods and setting.

There appeared to be trends in some elements of learning style (modality, mobility, motivation) to be strengths for some groups. Males reportedly were more mobile than females. Females were more responsible and less formal. Those classified as at-risk or low readers tended to be more global/tactile/kinesthetic than their higher achieving counterparts. It also appeared that some elements of style became stronger as students matured. Primary students tended to be global/ tactile/kinesthetic while students in upper grades became more auditory/visual.

The most common variables that were investigated were: a) gender, b) learning disabled, c) gifted, and d) grade levels. Frequently one element of reading or learning style such as sound, lighting, mobility or modality preferences and the impact of matching students with their preferred element was investigated. The present researcher found more literature available pertaining to higher grades (grades 6-12) than relating to students in grades 3 through 5.

Statement of the Problem

The purpose of the researcher was to investigate the reading styles of elementary students in the third, fourth, and fifth grades.

Rationale and Importance of the Research

With the constant demand to improve outcomes of students, it becomes evermore important to understand the ways students learn and utilize information in everyday classroom situations. Elementary counselors may be called upon by teachers, reading specialists, administrators, or family members to counsel or work with a student who may be experiencing difficulties with school work. Awareness of individual reading styles and the tendencies of particular groups of students, the knowledge of how to administer a reading styles inventory, and knowing how interpret and utilize this information with a particular student may help the counselor to

guide the student in study skills or reading applications. It may be helpful for the counselor to work with the reading specialist or to administer a reading styles inventory and explain the individual's reading style tendencies to the student and help the student, teachers, and family members to understand and utilize the information gained. The counselor may be called upon to make suggestions for environmental changes which may benefit the child. The school counselor may be involved in helping write individual educational plans for special education students or regular education students who are experiencing difficulties. The reading inventory can be used as a prescriptive tool for such programs.

This exploratory study generated information pertaining to the preferences of students in regards to reading styles. The results of the present study could be of utility for a number of persons associated with elementary students such as parents, teachers, reading specialists, Title I teachers, counselors, administrators, and curriculum directors. The information from the present study could be used in at least four possible ways: (1) a basis for diagnosing students' style preference, with application to teaching methods utilized with the students in appropriate learning environments; (2) a criterion for individualized academic programs, (3) a rationale for teaching strategies; and (4) a basis for additional research.

The results of the present study provided information pertaining to the following questions:

1. Is there an association between gender and preferred reading style?
2. Is there an association between class placement and preferred reading style?
3. Is there an association between at-risk status and preferred reading style?

Composite Null Hypothesis

The following null hypothesis was tested at the .05 level of significance:

The differences among the mean Reading Styles Inventory scores for 3rd, 4th, and 5th grade students according to gender, class level, and at-risk status will not be statistically significant.

Independent Variables and Rationale

The following independent variables were investigated: gender, grade placement, and at-risk status. The independent variables were selected for the following reasons:

1. a lack of information,
2. studies found were not current, and
3. the results of the studies found were inconclusive.

Definition of Variables

Independent Variables

Independent variables were obtained from records maintained by the school. The present researcher compiled a Demographic Sheet from the school records for each subject. The following independent variables were investigated.

1. gender - two levels;
   level 1 -- male, and
   level 2 -- female;
2. grade placement - three levels;
   level 1 -- third grade,
   level 2 -- fourth grade, and
   level 3 -- fifth grade;
3. at risk status - three levels;
   level 1 -- regular education, no support,
   level 2 -- regular education, Title I or tutor support, and
   level 3 -- special education, resource room support.

Dependent Variables

Generated scores from the following scales of the Reading Style Inventory were employed as dependent variables:

1. Psychological Stimuli -- two scales;
   a. Global Tendencies (four points possible), and

b. Analytic Tendencies (four points possible);

2. Perceptual Strengths -- four scales;

a. Auditory Strengths (four points possible),

b. Visual Strengths (four points possible),

c. Tactile Strengths (four points possible), and

d. Kinesthetic Strengths (four points possible);

3. Environmental Stimuli-- six scales;

a. Sound (a) With Music (three points possible),

b. Sound (b) With Talking (three points possible),

c. Light (three points possible),

d. Temperature (three points possible),

e. Design (a) Formal/Informal (three points possible),and

f. Design (b) Organization (three points possible);

4. Emotional Stimuli -- nine scales;

a. Peer-Motivated (two points possible),

b. Adult-Motivated (two points possible),

c. Self-Motivated (two points possible),

d. Persistence (three points possible),

e. Responsibility (three points possible),

f. Structure (a) Choices (three points possible),

g. Structure (b) Directions (three points possible),

h. Structure (c) Work Checked (three points possible),and

l. Structure (d) Work Checked By (three points possible);

5. Sociological Preferences -- five scales;

   a. Read to a Teacher (two points possible),

   b. Read With a Group of Students (two points possible),

   c. Read Alone (two points possible),

   d. Read With a Group of Students and an Adult (two points possible), and

   e. Read With One Student (two points possible);

6. Physical Stimuli -- six scales;

   a. Intake (three points possible),

   b. Reading in the Morning (two points possible),

   c. Reading in the Early Afternoon (two points possible),

   d. Reading in the Late afternoon (two points possible),

   e. Reading in the Evening (two points possible), and

   f. Mobility (three points possible).

Limitations

The following conditions may have affected the outcome of the present study:

1. the sample was not random,
2. sample size,
3. dependent variables were self-reported information, and
4. all the subjects came from the same geographical area.

Methodology

Setting

The setting for this study was Windom Elementary School located in McPherson County in central Kansas. The school is a kindergarten through fifth grade attendance center with one class for each grade except kindergarten which is taught in two half-day sessions. School enrollment was approximately 121 with some variance throughout the school year as students moved in and out.

The student population is drawn from the towns of Windom in McPherson County, population approximately 200, Little River in Rice County, population approximately 500, and the surrounding area. The area is largely rural, agricultural based. The major employers in the area include the school district and underground storage and pipeline companies. Businesses in Windom include the post office and grain elevator. In Little River, the major businesses include construction companies, a heating and plumbing company, a furniture store, a cafe, a bank, a grocery store, a telephone company, a cookie factory, the post office, and a nursing home.

Subjects

The sample incorporated students in grades 3 through 5 who were present the day the inventory was administered by the researcher. The sample consisted of 19 third graders, 8 girls and 11

boys; 15 fourth graders, 8 girls and 7 boys; and 23 fifth graders, 8 girls and 15 boys.

Nine students in the sample had Individual Educational Plans placing them in Special Services on a daily basis for learning disabilities or behavior disorders. Students placed in special services met state guidelines for learning disabled or behavior disordered and had been placed after being referred by the classroom teacher, being tested by the school psychologist and resource room staff, and meeting guidelines. Each student in Special Services followed the instructional program established in their Individual Educational Plan. Special education services are provided through the Rice County Special Services Cooperative.

Twelve students in the sample received support from Title I, the At-risk Tutor Program, or both. For this study no differentiation was made between students in Title I or the At-risk Tutor Program because most students were in both programs.

Title I students were placed in the program based upon results on the Comprehensive Test of Basic Skills administered the previous spring and upon teacher recommendation for the Title I program. The Title I teachers work in collaboration with the regular classroom teacher to meet the needs of these students. The Title I teachers work primarily in the classroom with limited amount of pull out

from the group.

The At-risk Tutor Program was available to students before or after school on a voluntary participation basis to students recommended by the classroom teacher as being at-risk. The at-risk criterion was based primarily upon poor performance in the classroom, failure to pass a subject in the classroom, or poor test performance in the classroom. The tutoring was provided by 3 regular classroom teachers, the resource room teacher, and 1 resource room paraprofessional, who were all on the staff of Windom School. Students received tutoring 2 times a week for 30 minutes.

Instruments

Two instruments were employed for this study. A Demographic Data Sheet and The Reading Styles Inventory, Intermediate Version (National Reading Styles Institute, P.O. Box 737, Syosset, New York 11791) were used.

Demographic Data Sheet. The present researcher developed the Demographic Data Sheet (Appendix D). This sheet was used to record the needed information obtained from the students' records for the dependent variables. The sheet incorporated the student's name, gender, grade, and at-risk status.

The Reading Styles Inventory, Intermediate Version (RSI-I). The Reading Styles Inventory, Intermediate Version developed by Carbo was employed to assess the individual reading style preferences of the subjects. The RSI-I was designed for use with students in grades 3 through 8. The RSI-I is available from the National Reading Styles Institute in Syosset, New York. The instrument used was already a part of the school's testing program.

The RSI-I is a 68 item self-reporting instrument. Items 1 through 14 and 53 through 68 each contain 3 short statements which describe a condition or characteristic. Generally, response A and response B are opposites of each other and response C indicates no preference for either described condition. Items 15 through 52 contain 2 brief statements which are opposite responses. A student selects the letter of the response which best describes the individual.

The RSI-I is an untimed instrument which may be administered individually with students responding directly on a computer or to a large group using RSI-I test booklets with students responding on a reproducible answer sheet. It may be given in one or more sittings, depending upon the attention span of the individual or the group. If the booklets and answer sheet format is employed, the teacher or administrator of the instrument must then transfer

individual responses to the Reading Style Inventory Individual Computer Disk which is designed to work with multiple levels of the Reading Style Inventory. The responses, as reported directly by the student on computer or by the test administrator from student response sheets are computer scored and individual profiles are printed.

The individual reading style profile contains a diagnosis of the student's Psychological Stimuli (2 scales), Perceptual Strengths (4 scales), Environmental Stimuli (6 scales), Emotional Stimuli (9 scales), Sociological Preferences (5 scales), and Physical Stimuli (6 scales). The purpose of the instrument is to identify individual student strengths and preferences when they read.

Reliability studies, as reported in The Reading Styles Inventory manual (Carbo, 1991), were conducted with The Reading Styles Inventory for grades 2 through 8 in 1981 and 1988. A test-retest procedure was employed with a 3 week interval between tests. The RSI sub scales ranged from .67 to .77. Reliabilities of .70 or higher were reported for all grade levels for Sound (.72), Design (.71), Motivation (.70), Structure (.72), Auditory Perception (.74), Visual Perception (.77), Kinesthetic Perception (.75), and Mobility (.76). In the 1988 follow up study utilizing 87 second graders, the

test- retest reliability coefficients for the RSI ranged from .67 to .83 and averaged .74.

Design and Data Collecting Procedures

A status survey factorial design was employed. The independent variables investigated were: gender, grade placement, and student at-risk status. The dependent variables were converted scores from the individual reading profiles of the Reading Style Inventory. Fifty-seven students participated in the study. One composite null hypothesis was tested at the .05 level employing three-factor analysis of variance (general linear model). The following design was used to test the composite null hypothesis: a 2X3X3 factorial design.

A letter (Appendix A) requesting permission to utilize the instrument in the study was sent to Dr. Marie Carbo, author of the Reading Styles Inventory, at the National Readings Styles Institute in Syosset, New York. The letter was returned with her permission.

A letter requesting permission to use the students in his school as subjects was sent to Mr. Harold Schrag, principal of Windom Elementary School (Appendix B). Mr. Schrag returned a letter of permission for the children in the school to participate in the present study (Appendix C).

The present researcher met with Mr. Harold Schrag to complete

the Demographic Data Sheets on each student (Appendix D). School records were consulted for accuracy in identifying each student's at-risk status and grade placement.

For this study, the present researcher administered the Reading Styles Inventory to class-sized groups at each of the grade levels, grades 3 through 5. It was possible to administer the entire inventory in one sitting at each of the grade levels. The researcher scheduled a time to meet with each class of students with their home room teacher. The teachers made arrangements for all students who may be in Special Service classes at that time to be present. The researcher provided each class with instructions about the project (Appendix E). Each student present was given a copy of the test booklet and response sheet. Students recorded their name, date, and grade on the response sheet. The researcher read the printed directions and sample given in the RSI-I. Students were instructed to record the letter of the response which best described themselves. The entire inventory was read by the researcher to the third graders in accordance to the guidelines of the instrument that it be read to individuals not reading at the fourth grade level, as they followed along in the test booklet. The students recorded their response on their answer sheet before the researcher moved to the next set of statements. The fourth and fifth grade students read

each item on their own and responded on the response form. Help was provided by the researcher for any unknown words individual students encountered. Students' questions were answered before and during the administration of the RSI-I but students were not allowed to discuss answers among themselves. Each student was permitted the amount of time necessary to complete the questionnaire. The administration took 30 to 40 minutes in each classroom.

The researcher used the individual response sheets to transfer responses onto the Reading Style Inventory (RSI) Individual diskette. Student's first and last name, grade level, date of profile, and RSI intermediate level were entered and saved. Then the individual's responses were entered before moving on to the next student. The computer program automatically saved the student responses when moving to the next student. When all student information and responses were entered the researcher followed the process in the program's manual to computer score each students' responses and print each individual's reading profile.

Completed Demographic Data Sheets (Appendix D) were matched to individual student profiles. The present researcher used the information from the profiles to compile a data sheet. The data were analyzed by personnel of the Computing Center at Fort Hays

State University.

Data Analysis

The following were compiled,

1. appropriate descriptive statistics,
2. three-factor analysis of variance (general linear model),
3. Bonforoni (Dunn) t test for means, and
4. Duncan's multiple range test for means.

Results

The purpose of the researcher was to investigate the reading styles of third, fourth, and fifth grade students. The independent variables investigated were gender, grade level, and at-risk status. The dependent variables consisted of compiled scores from The Reading Styles Inventory. The sample was from the elementary school in Windom, Kansas. The sample consisted of 57 participants, 33 males, and 24 females. One null hypothesis was tested at the .05 level of significance employing an analysis of variance (general linear model) using a 2X3X3 factorial design. The results section was organized according to the categories of dependent variables for ease of reference. Information pertaining to each component was presented in a common format for ease of comparison.

It was hypothesized in the composite null hypothesis that the differences among the mean Reading Styles Inventory scores for 3rd,

4th, and 5th grade students according to gender, class level, and at-risk status would not be statistically significant. Information pertaining to the hypothesis was presented in six tables.

1. Information pertaining to Psychological Stimuli was cited in Table 1,
2. Information pertaining to Perceptual Strengths was cited in Table 2,
3. Information pertaining to Environmental Stimuli was cited in Table 3,
4. Information pertaining to Emotional Stimuli was cited in Table 4,
5. Information pertaining to Sociological Preferences was cited in Table 5, and
6. Information pertaining to Physical Stimuli was cited in Table 6.

Information pertaining to Psychological Stimuli (2 scales) was cited in Table 1. The following were presented in Table 1: variables, group sizes, means, standard deviations, F values, and p levels.

Table 1: A Comparison of Mean Reading Styles Inventory - Intermediate Scores (Psychological Stimuli) for 3rd, 4th, and 5th Grade Students According to Gender, Grade Level, and At-Risk Status Employing Three-Way Analysis of Variance (General Linear Model).

Variables	n	M*	s	F values	p levels
		Global Tendencies**			
Gender (A)					
Male	33	2.39	0.496	1.29	.2826
Female	24	2.42	0.504		
Grade Level (B)					
3rd	19	2.42	0.507		
4th	15	2.40	0.507	0.42	.6621
5th	25	2.39	0.499		
At-Risk Status (C)					
Regular Education	36	2.36	0.487		
Title 1/ Tutor	12	2.58	0.515	1.32	.2788
Special Education	9	2.33	0.500		
		Interactions			
		A x B		0.90	.4160
		A x C		0.48	.6229
		B x C		1.26	.3019
		A x B x C		0.14	.7117

(Continued)

Table 1 (Continued)

Variables	n	M*	s	F values	p levels
		Analytic Tendencies			
Gender (A)					
Male	33	2.67	0.540	0.67	.4181
Female	24	2.54	0.588		
Grade Level (B)					
3rd	19	2.63	0.500		
4th	15	2.60	0.507	0.00	.9985
5th	23	2.61	0.656		
At-Risk Status (C)					
Regular Education	36	2.58	0.544		
Title 1/ Tutor	12	2.67	0.651	0.51	.6063
Special Education	9	2.67	0.500		
		Interactions			
		A x B		0.24	.7850
		A x C		1.29	.2864
		B x C		1.07	.3834
		A x B x C		1.49	.2288

* The larger the value the more positive the attribute.

** The scales had the following possible scores: Global Tendencies (1 - 4); and Analytic Tendencies (1 - 4).

None of the 14 p values were statistically significant at the .05 level; therefore, the null hypotheses for these comparisons were retained. The results cited in Table 1 indicated no associations between independent and dependent variables. All scores appeared to represent a common population.

Information pertaining to Perceptual Strengths (4 scales) was cited in Table 2. The following were presented in Table 2: variables, group sizes, means, standard deviations, F values, and p levels.

Table 2: A Comparison of Mean Reading Styles Inventory - Intermediate Scores (Perceptual Strengths) for 3rd, 4th, and 5th Grade Students According to Gender, Grade Level, and At-Risk Status Employing Three-Way Analysis of Variance (General Linear Model).

Variables	n	M*	s	F values	p levels
		Auditory Strengths**			
Gender (A)					
Male	33	3.13	1.045	2.53	.1189
Female	24	2.97	0.992		
Grade Level (B)					
3rd	19	3.07	1.054		
4th	15	3.04	1.100	0.36	.6981
5th	23	3.00	0.976		
At-Risk Status (C)					
Regular Education	36	3.17	0.941		
Title 1/ Tutor	12	2.50	1.087	2.57	.0885
Special Education	9	3.22	1.093		
		Interactions			
		A x B		0.13	.8792
		A x C		1.53	.2288
		B x C		1.66	.1782
		A x B x C		1.57	.2178

(Continued)

Table 2 (Continued)

Variables	n	M*	s	F values	p levels
		Visual Strengths			
Gender (A)					
Male	33	3.36	0.589	0.30	.5859
Female	24	2.92	1.100		
Grade Level (B)					
3rd	19	3.11	0.994		
4th	15	3.40	0.737	1.74	.1875
5th	23	3.09	1.125		
At-Risk Status (C)					
Regular Education	36	3.50	0.811		
Title 1/ Tutor	12	2.67	1.165	2.45	.0982
Special Education	9	2.58	0.866		
		Interactions			
		A x B		1.08	.3477
		A x C		2.93	.0642
		B x C		1.94	.1213
		A x B x C		0.19	.6676

(Continued)

Table 2 (Continued)

Variables	n	M*	s	F values	p levels
		Tactile Strengths			
Gender (A)					
Male	33	2.82	0.92	1.90	.1756
Female	24	3.20	0.59		
Grade Level (B)					
3rd	19	3.16	0.60		
4th	15	3.20	0.77	0.41	.6672
5th	23	2.70	0.93		
At-Risk Status (C)					
Regular Education	36	3.00	0.83		
Title 1/ Tutor	12	3.00	0.85	1.06	.3550
Special Education	9	2.89	0.78		
		Interactions			
		A x B		1.45	.2471
		A x C		0.41	.6689
		B x C		1.38	.2579
		A x B x C		0.94	.3386

(Continued)

Table 2 (Continued)

Variables	n	M*	s	F values	p levels
		Kinesthetic Strengths			
Gender (A)					
Male	33	3.82	0.392	0.22	.6393
Female	24	3.79	0.415		
Grade Level (B)					
3rd	19	3.89	0.315		
4th	15	3.80	0.414	2.09	.1368
5th	23	3.74	0.449		
At-Risk Status (C)					
Regular Education	36	3.86	0.351		
Title 1/ Tutor	12	3.75	0.452	2.24	.1190
Special Education	9	3.67	0.500		
		Interactions			
		A x B		1.44	.2485
		A x C		2.94	.0635
		B x C		1.51	.2153
		A x B x C		0.05	.8199

* The larger the value the more positive the attribute.

** The scales had the following possible scores: Auditory Strengths (1 - 4); Visual Strengths (1 - 4); Tactile Strengths (1 - 4); and Kinesthetic Strengths (1 - 4).

None of the 28 p values were statistically significant at the .05 level; therefore, the null hypotheses for these comparisons were retained. The results cited in Table 2 indicated no associations between independent and dependent variables. All scores appeared to represent a common population.

Information pertaining to Environmental Stimuli (6 scales) was cited in Table 3. The following were presented in Table 3: variables, group sizes, means, standard deviations, F values, and p levels.

Table 3: A Comparison of Mean Reading Styles Inventory - Intermediate Scores (Environmental Stimuli) for 3rd, 4th, and 5th Grade Students According to Gender, Grade Level, and At-Risk Status Employing Three-Way Analysis of Variance (General Linear Model).

Variables	n	M*	s	F values	p levels
		Sound (a) Music**			
Gender (A)					
Male	33	2.06[g]	0.788	4.07	.0501
Female	24	2.25[h]	0.676		
Grade Level (B)					
3rd	19	2.26	0.653		
4th	15	1.93	0.799	1.83	.1729
5th	21	2.17	0.778		
At-Risk Status (C)					
Regular Education	36	2.06	0.715		
Title 1/ Tutor	12	2.42	0.669	0.81	.4521
Special Education	9	2.11	0.928		
		Interactions			
		A x B		0.50	.6117
		A x C		1.88	.1651
		B x C		1.18	.3319
		A x B x C		0.81	.3732

(Continued)

Table 3 (Continued)

Variables	n	M*	s	F values	p levels
		Sound (b) Talking			
Gender (A)					
Male	33	1.30	0.585	1.65	.2055
Female	24	1.42	0.584		
Grade Level (B)					
3rd	19	1.26	0.562		
4th	15	1.33	0.488	0.04	.9588
5th	23	1.43	0.662		
At-Risk Status (C)					
Regular Education	36	1.28	0.513		
Title 1/ Tutor	12	1.50	0.798	0.83	.4423
Special Education	9	1.44	0.527		
		Interactions			
		A x B		0.98	.3832
		A x C		1.64	.2058
		B x C		0.17	.9548
		A x B x C		0.55	.4624

(Continued)

Table 3 (Continued)

Variables	n	M*	s	F values	p levels
		Light			
Gender (A)					
Male	33	1.61	0.747	0.32	.5721
Female	24	1.54	0.721		
Grade Level (B)					
3rd	19	1.47	0.772		
4th	15	1.60	0.737	0.80	.4554
5th	23	1.65	0.714		
At-Risk Status (C)					
Regular Education	36	1.64	0.723		
Title 1/ Tutor	12	1.08[a]	0.289	3.17	.0522
Special Education	9	2.00[b]	0.866		
		Interactions			
		A x B		0.82	.4470
		A x C		0.14	.8657
		B x C		3.22	.0217
		A x B x C		0.37	.5475

(Continued)

Table 3 (Continued)

Variables	n	M*	s	F values	p levels
		Temperature			
Gender (A)					
Male	33	1.73	0.626	2.91	.0956
Female	24	2.13	0.537		
Grade Level (B)					
3rd	19	1.89	0.658		
4th	15	2.00	0.655	0.55	.5823
5th	23	1.83	0.576		
At-Risk Status (C)					
Regular Education	36	1.97	0.609		
Title 1/ Tutor	12	1.58	0.669	0.52	.5964
Special Education	9	2.00	0.500		
		Interactions			
		A x B		2.13	.1315
		A x C		0.91	.4117
		B x C		1.62	.1873
		A x B x C		2.27	.1390

(Continued)

Table 3 (Continued)

Variables	n	M*	s	F values	p levels
		Design (a) Formal/Informal			
Gender (A)					
Male	33	1.21	0.485	1.18	.2835
Female	24	1.29	0.464		
Grade Level (B)					
3rd	19	1.05	0.223		
4th	15	1.27	0.458	1.49	.2375
5th	23	1.29	0.583		
At-Risk Status (C)					
Regular Education	36	1.28	0.513		
Title 1/ Tutor	12	1.08	0.289	1.81	.1759
Special Education	9	1.33	0.500		
		Interactions			
		A x B		0.96	.3907
		A x C		2.15	.1593
		B x C		0.48	.7531
		A x B x C		3.13	.0840

(Continued)

Table 3 (Continued)

Variables	n	M*	s	F values	p levels
		Design (b) Organization			
Gender (A)					
Male	33	1.76	0.936	0.25	.6164
Female	24	1.71	0.908		
Grade Level (B)					
3rd	19	2.00	1.000		
4th	15	1.53	0.743	1.07	.3527
5th	23	1.65	0.935		
At-Risk Status (C)					
Regular Education	36	1.86	0.931		
Title 1/ Tutor	12	1.50	0.905	1.20	.3109
Special Education	9	1.56	0.882		
		Interactions			
		A x B		0.27	.7663
		A x C		0.33	.7238
		B x C		0.26	.8990
		A x B x C		0.08	.7763

* The larger the value the more positive the attribute.

** The scales had the following possible scores: Sound (a) With Music (1 - 3); Sound (b) With Talking (1 - 3); Light (1 - 3); Temperature (1 - 3); Design (a) Formal/Informal (1 - 3); and Design (b) Organization (1 - 3).

[gh]The difference was statistically significant at the .05 level.

[ab]The difference was statistically significant at the .05 level according to Bonferroni (Dunn) t test for means.

Three of the 42 p values were statistically significant at the .05 level; therefore, the null hypotheses for these comparisons were rejected. Two of the statistically significant comparisons were for main effects. The following main effects were statistically significant:

1. the independent variable gender for the dependent variable Sound (a) Music, and
2. the independent variable at-risk status for the dependent variable Light.

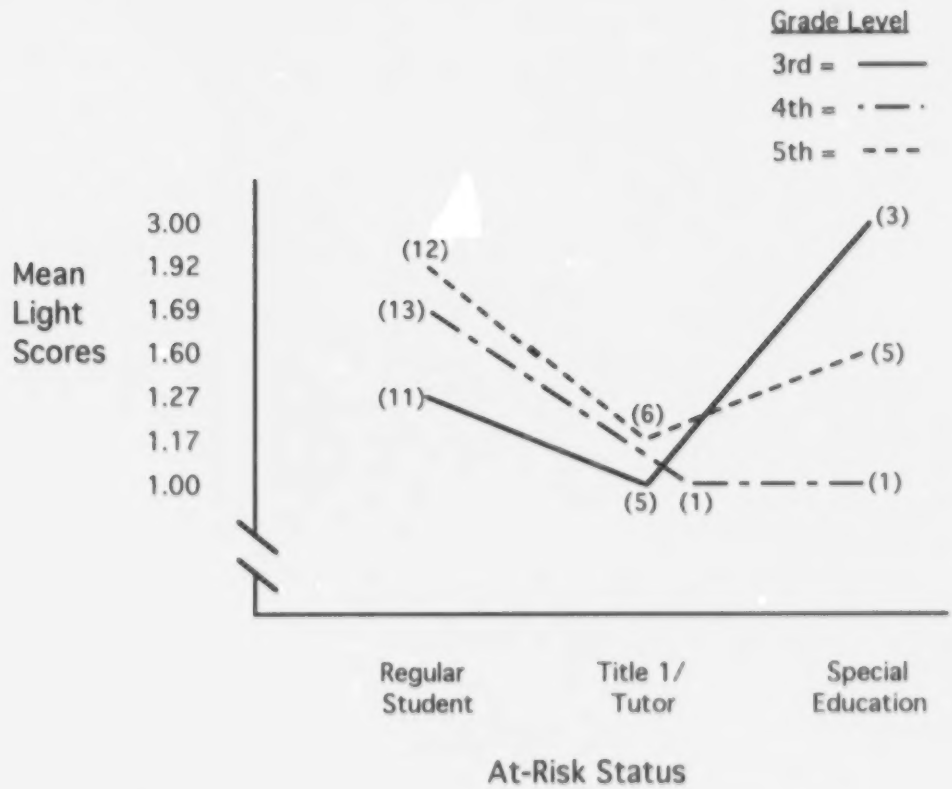
The information cited in Table 3 indicated the following for main effects:

1. females reported a statistically larger mean Sound (a) Music score (greater preference for music while reading) than males, and
2. special education students reported a statistically larger mean Light score (greater preference for bright light while reading) than Title 1/tutor students.

One of the 3 significant comparisons was for an interaction. The following interaction was statistically significant: the independent variables grade level and at-risk status for the dependent variable Light. The interaction between grade level and at-risk status for the dependent variable Light was depicted in a

profile plot. Figure 1 contains mean Light scores and curves for grade level.

Figure 1: The Interaction Between Grade Level and At-Risk Status for the Dependent Variable Light



The interaction between grade level and at-risk status for the dependent variable Light was disordinal. The results cited in Figure 1 indicated the following:

1. students in third grade and special education had numerically the highest mean Light score (greater preference for bright light while reading) of any subgroup, and
2. third grade students in Title 1/tutor, fourth grade students in Title 1/tutor, and fourth grade students in special education had numerically the lowest mean Light score (preference for reading in dim light) of any subgroups.

Information pertaining to Emotional Stimuli (9 scales) was cited in Table 4. The following were presented in Table 4: variables, group sizes, means, standard deviations, F values, and p levels.

Table 4: A Comparison of Mean Reading Styles Inventory - Intermediate Scores (Emotional Stimuli) for 3rd, 4th, and 5th Grade Students According to Gender, Grade Level, and At-Risk Status Employing Three-Way Analysis of Variance (General Linear Model).

Variables	n	M*	s	F values	p levels
		Peer-Motivated**			
Gender (A)					
Male	33	1.55	0.506	0.24	.6291
Female	24	1.58	0.504		
Grade Level (B)					
3rd	19	1.63	0.496		
4th	15	1.53	0.516	0.05	.9546
5th	23	1.52	0.511		
At-Risk Status (C)					
Regular Education	36	1.58	0.500		
Title 1/ Tutor	12	1.67	0.492	1.66	.2029
Special Education	9	1.33	0.500		
		Interactions			
		A x B		0.74	.4849
		A x C		1.05	.3582
		B x C		0.64	.6377
		A x B x C		2.03	.1615

(Continued)

Table 4 (Continued)

Variables	n	M*	s	F values	p levels
		Adult-Motivated			
Gender (A)					
Male	33	1.21	0.415	0.12	.7312
Female	24	1.33	0.482		
Grade Level (B)					
3rd	19	1.47	0.513		
4th	15	1.20	0.414	0.57	.5674
5th	23	1.13	0.344		
At-Risk Status (C)					
Regular Education	36	1.28	0.454		
Title 1/ Tutor	12	1.08	0.289	2.56	.0891
Special Education	9	1.44	0.527		
		Interactions			
		A x B		1.00	.3756
		A x C		0.62	.5424
		B x C		4.19	.0061
		A x B x C		0.11	.7406

(Continued)

Table 4 (Continued)

Variables	n	M*	s	F values	p levels
		Self-Motivated			
Gender (A)					
Male	33	1.48	0.508	0.96	.3338
Female	24	1.71	0.464		
Grade Level (B)					
3rd	19	1.74	0.452		
4th	15	1.73	0.458	3.02	.0594
5th	23	1.35	0.487		
At-Risk Status (C)					
Regular Education	36	1.56	0.504		
Title 1/ Tutor	12	1.50	0.522	1.10	.3424
Special Education	9	1.78	0.441		
		Interactions			
		A x B		0.48	.6202
		A x C		0.63	.5389
		B x C		0.44	.7786
		A x B x C		2.14	.1507

(Continued)

Table 4 (Continued)

Variables	n	M*	s	F values	p levels
			Persistence		
Gender (A)					
Male	33	2.15	0.667	0.96	.3333
Female	24	2.29	0.550		
Grade Level (B)					
3rd	19	2.26	0.653		
4th	15	2.47	0.516	2.05	.1413
5th	23	2.00	0.603		
At-Risk Status (C)					
Regular Education	36	2.19	0.624		
Title 1/ Tutor	12	2.08	0.669	0.44	.6498
Special Education	9	2.44	0.527		
			Interactions		
		A x B		1.09	.3448
		A x C		0.44	.6487
		B x C		1.96	.1191
		A x B x C		1.82	.1846

(Continued)

Table 4 (Continued)

Variables	n	M*	s	F values	p levels
			Responsibility		
Gender (A)					
Male	33	2.58	0.560	0.00	.9614
Female	24	2.71	0.464		
Grade Level (B)					
3rd	19	2.84	0.375		
4th	15	2.80	0.414	2.61	.0857
5th	23	2.35	0.573		
At-Risk Status (C)					
Regular Education	36	2.61	0.549		
Title 1/ Tutor	12	2.67	0.492	0.24	.7856
Special Education	9	2.67	0.500		
			Interactions		
		A x B		1.05	.3591
		A x C		0.46	.6348
		B x C		1.18	.3321
		A x B x C		0.12	.7313

(Continued)

Table 4 (Continued)

Variables	n	M*	s	F values	p levels
		Structure (a) Choices			
Gender (A)					
Male	33	2.94[a]	0.242	7.54	.0089
Female	24	2.71[b]	0.624		
Grade Level (B)					
3rd	19	2.63[a]	0.684		
4th	15	3.00[b]	0.000	4.28	.0204
5th	23	2.91	0.288		
At-Risk Status (C)					
Regular Education	36	2.89	0.398		
Title 1/ Tutor	12	2.83	0.577	1.48	.2400
Special Education	9	2.67	0.500		
		Interactions			
		A x B		2.10	.1346
		A x C		1.64	.2061
		B x C		0.16	.9593
		A x B x C		1.09	.3018

(Continued)

Table 4 (Continued)

Variables	n	M*	s	F values	p levels
		Structure (b) Directions			
Gender (A)					
Male	33	1.87	0.927	0.96	.3319
Female	24	2.12	0.797		
Grade Level (B)					
3rd	19	2.21[a]	0.918		
4th	15	2.47[a]	0.640	5.01	.0112
5th	23	1.48[b]	0.730		
At-Risk Status (C)					
Regular Education	36	2.06	0.860		
Title 1/ Tutor	12	1.58	0.900	0.57	.5693
Special Education	9	2.22	0.833		
		Interactions			
		A x B		0.58	.5645
		A x C		0.71	.4976
		B x C		0.52	.7243
		A x B x C		0.05	.8255

(Continued)

Table 4 (Continued)

Variables	n	M*	s	F values	p levels
		Structure (c) Work Checked			
Gender (A)					
Male	33	1.97[g]	0.951	3.97	.0528
Female	24	1.71[h]	0.908		
Grade Level (B)					
3rd	19	2.11	0.937		
4th	15	1.73	0.961	1.30	.2846
5th	23	1.74	0.915		
At-Risk Status (C)					
Regular Education	36	1.94	0.924		
Title 1/ Tutor	12	2.00	1.044	2.14	.1298
Special Education	9	1.33	0.707		
		Interactions			
		A x B		0.93	.4016
		A x C		1.45	.0471
		B x C		0.49	.7402
		A x B x C		0.25	.6213

(Continued)

Table 4 (Continued)

Variables	n	M*	s	F values	p levels
		Structure (d) Work Checked By			
Gender (A)					
Male	33	2.18	0.846	2.64	.1116
Female	24	2.21	0.721		
Grade Level (B)					
3rd	19	2.21	0.787		
4th	15	2.53	0.516	0.04	.9655
5th	23	1.96	0.878		
At-Risk Status (C)					
Regular Education	36	2.28[g]	0.779		
Title 1/ Tutor	12	1.91[h]	0.793	3.22	.0499
Special Education	9	2.22[g]	0.833		
		Interactions			
		A x B		4.13	.0230
		A x C		7.69	.0014
		B x C		1.05	.3927
		A x B x C		0.32	.5725

* The larger the value the more positive the attribute.

** The scales had the following possible scores: Peer-Motivated (1 -2); Adult-Motivated (1 - 2); Self-Motivated (1 - 2); Persistence (1 - 3); Responsibility (1 -3); Structure (a) Choices (1 - 3); Structure (b) Directions (1 - 3); Structure (c) Work Checked (1 - 3); and Structure (d) Work Checked By (1 - 3).

[gh]The difference was statistically significant at the .05 level.

[ab]The difference was statistically significant at the .05 level according to Bonferroni Dunn t test for means.

Nine of the 63 p values were statistically significant at the .05 level; therefore, the null hypotheses for these comparisons were rejected. Five of the statistically significant comparisons were for main effects. The following main effects were statistically significant:

1. the independent variable gender for the dependent variable Structure (a) Choices,
2. the independent variable grade level for the dependent variable Structure (a) Choices,
3. the independent variable grade level for the dependent variable Structure (b) Directions,
4. the independent variable gender for the dependent variable Structure (c) Work Checked, and
5. the independent variable at-risk status for the dependent variable Structure (d) Work Checked By.

The information cited in Table 4 indicated the following for main effects:

1. males reported statistically larger mean Structure (a) Choices score (greater preference for choices in reading material) than females,
2. students in grade 4 reported statistically larger mean Structure (a) Choices score (greater preference for choices

in reading material) than students in grade 3,

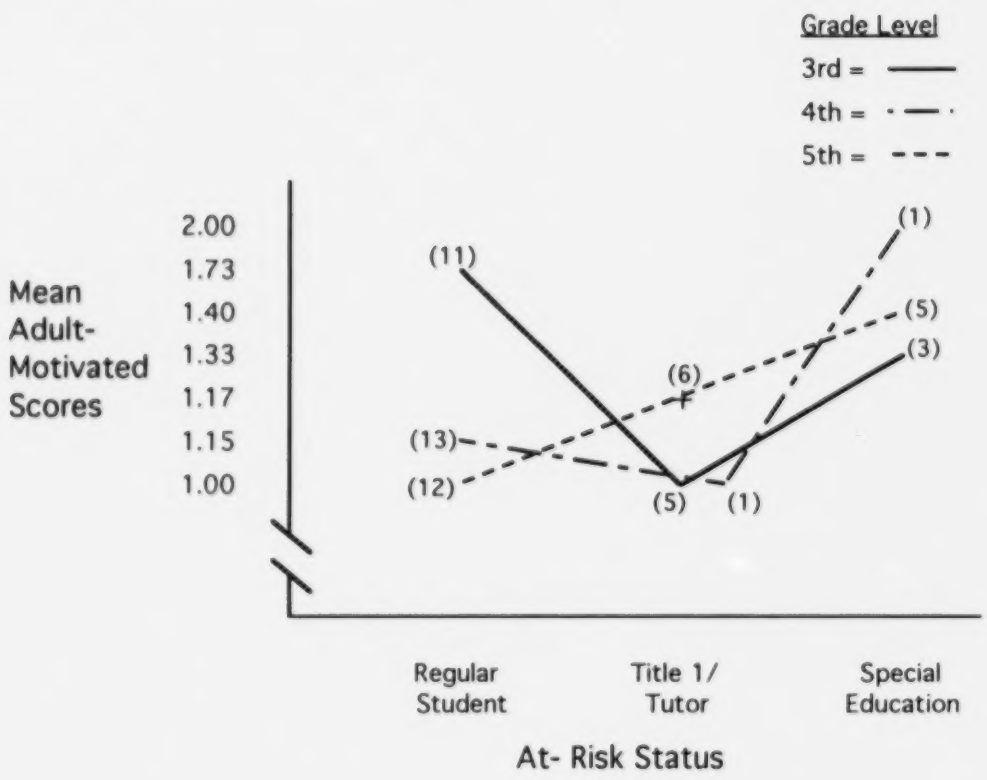
3. students in grades 3 and 4 reported a statistically larger mean Structure (b) Directions score (greater preference for more directions) than students in grade 5,
4. males reported a statistically larger mean Structure (c) Work Checked score (greater preference for having work checked frequently) than females, and
5. regular education and special education students reported a statistically larger mean Structure (c) Work Checked By score (greater preference for having work checked by peers) than students in Title 1/tutor.

Four of the nine significant comparisons were for interactions. The following interactions were statistically significant:

1. the independent variables grade level and at-risk status for the dependent variable Adult- Motivated,
2. the independent variables gender and at-risk status for the dependent variable Structure (c) Work Checked,
3. the independent variables gender and grade level for the dependent variable Structure (d) Work Checked By, and
4. the independent variables gender and at-risk status for the dependent variable Structure (d) Work Checked By.

The interaction between grade level and at-risk status for the dependent variable Adult-Motivated was depicted in a profile plot. Figure 2 contains mean Adult-Motivated scores and curves for grade level.

Figure 2: The Interaction Between Grade Level and At-Risk Status for the Dependent Variable Adult-Motivated



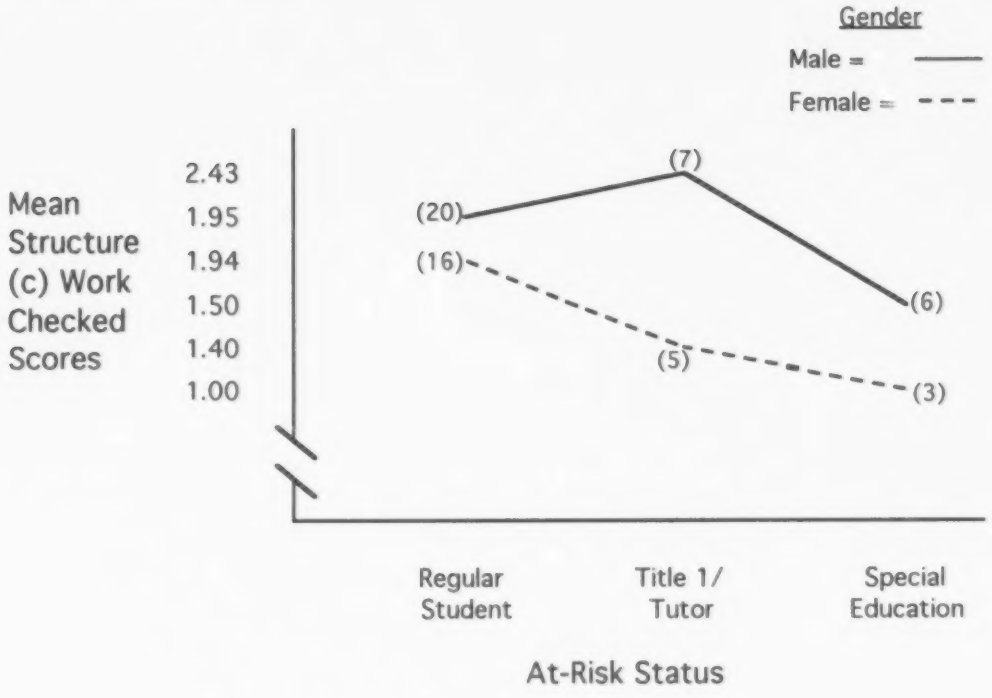
The interaction between grade level and at-risk status for the dependent variable Adult-Motivated was disordinal. The results

cited in Figure 2 indicated the following:

1. third grade students in regular education and fourth grade students in special education had numerically the highest mean Adult-Motivated scores (adult-motivated) for any subgroups, and
2. third grade students in Title 1/tutor and fourth grade students in Title1/tutor had numerically the lowest mean Adult-Motivated scores (not adult-motivated) of any subgroups.

The interaction between gender and at-risk status for the dependent variable Structure (c) Work Checked was depicted in a profile plot. Figure 3 contains mean Structure (c) Work Checked scores and curves for gender.

Figure 3: The Interaction Between Gender and At-Risk Status for the Dependent Variable Structure (c) Work Checked



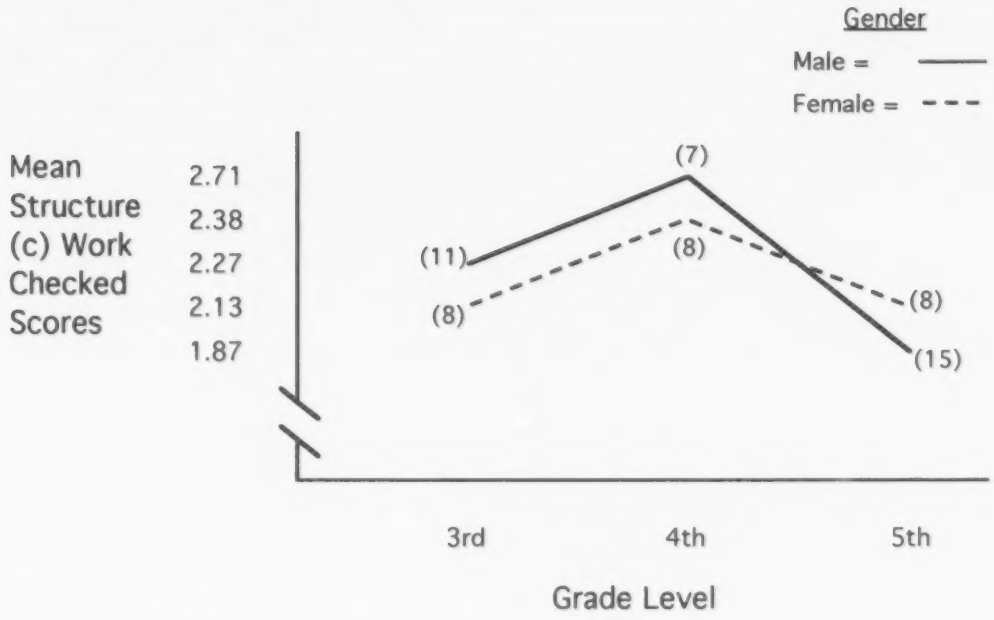
The interaction between gender and at-risk status for the dependent variable Structure (c) Work Checked was ordinal. The results cited in Figure 3 indicated the following:

1. male students in Title 1/tutor had numerically the highest mean Structure (c) Work Checked score (prefer work checked immediately) of any subgroup, and
2. female students in special education had numerically the lowest mean Structure (c) Work Checked score (prefer work

checked seldom) of any subgroup.

The interaction between gender and grade level for the dependent variable Structure (d) Work Checked By was depicted in a profile plot. Figure 4 contains mean Structure (d) Work Checked By scores and curves for gender.

Figure 4: The Interaction Between Gender and Grade Level for the Dependent Variable Structure (d) Work Checked By

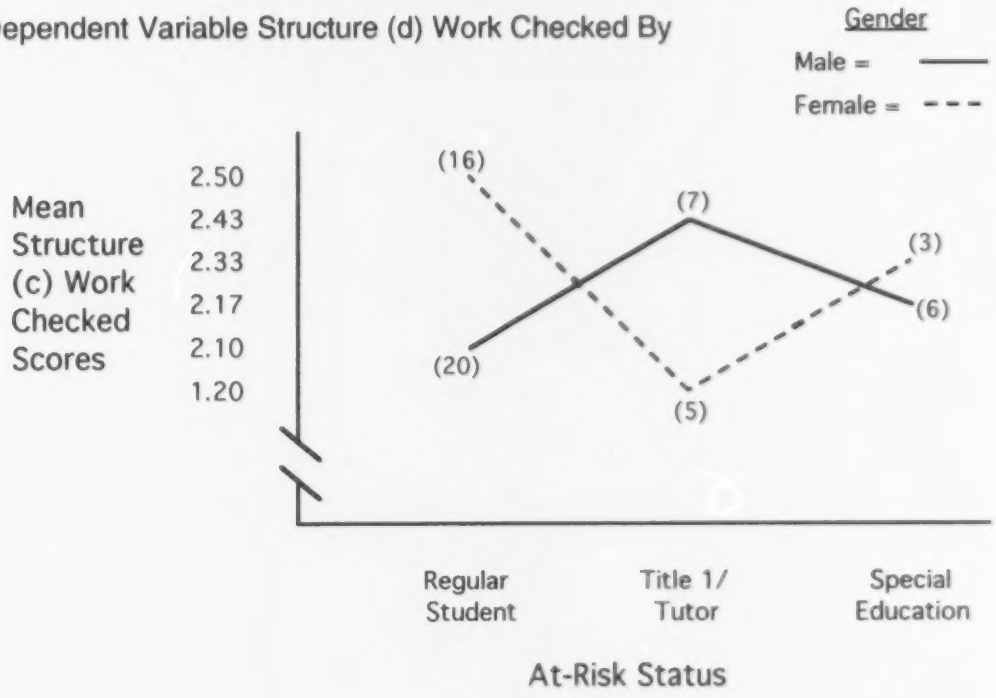


The interaction between gender and grade level for the dependent variable Structure (d) Work Checked By was disordinal. The results cited in Figure 4 indicated the following:

1. male students in grade 4 had numerically the highest mean Structure (d) Work Checked By score (prefer work to be checked by a teacher) of any subgroup, and
2. male students in grade 5 had numerically the lowest mean Structure (d) Work Checked By score (prefer work to be checked by peers) than any subgroup.

The interaction between gender and at-risk status for the dependent variable Structure (d) Work Checked By was depicted in a profile plot. Figure 5 contains mean Structure (d) Work Checked By scores and curves for gender.

Figure 5: The Interaction Between Gender and At-Risk Status for the Dependent Variable Structure (d) Work Checked By



The interaction between gender and at-risk status for the dependent variable Structure (d) Work Checked By was disordinal. The results cited in Figure 5 indicated the following:

1. females in regular education had numerically the highest mean Structure (d) Work Checked By score (prefer work checked by a teacher) of any subgroup, and
2. females in Title 1/tutor had numerically the lowest mean Structure (d) Work Checked By score (prefer work checked by self) of any subgroup.

Information pertaining to Sociological Preferences (5 scales) was cited in Table 5. The following were presented in Table 5: variables, group sizes, means, standard deviations, F values, and p levels.

Table 5: A Comparison of Mean Reading Styles Inventory - Intermediate Scores (Sociological Preference) for 3rd, 4th, and 5th Grade Students According to Gender, Grade Level, and At-Risk Status Employing Three-Way Analysis of Variance (General Linear Model)

Variables	n	M*	s	F values	p levels
		Read to a Teacher**			
Gender (A)					
Male	33	1.27	0.452	0.00	.9894
Female	24	1.42	0.503		
Grade Level (B)					
3rd	19	1.58	0.507		
4th	15	1.20	0.414	2.16	.1276
5th	23	1.22	0.422		
At-Risk Status (C)					
Regular Education	36	1.31	0.467		
Title 1/ Tutor	12	1.42	0.515	0.32	.7304
Special Education	9	1.33	0.500		
		Interactions			
		A x B		1.09	.3454
		A x C		2.15	.1294
		B x C		0.34	.8477
		A x B x C		0.90	.3473

(Continued)

Table 5 (Continued)

Variables	n	M*	s	F values	p levels
		Read With a Group of Students			
Gender (A)					
Male	33	1.52	0.508	0.17	.6797
Female	24	1.58	0.504		
Grade Level (B)					
3rd	19	1.74	0.452		
4th	15	1.53	0.516	1.01	.3721
5th	23	1.39	0.499		
At-Risk Status (C)					
Regular Education	36	1.47	0.506		
Title 1/ Tutor	12	1.75	0.452	1.82	.1748
Special Education	9	1.56	0.527		
		Interactions			
		A x B		0.75	.4805
		A x C		1.58	.2189
		B x C		0.78	.5476
		A x B x C		0.12	.7309

(Continued)

Table 5 (Continued)

Variables	n	M*	s	F values	p levels
		Read Alone			
Gender (A)					
Male	33	1.82	0.392	0.01	.9190
Female	24	1.71	0.464		
Grade Level (B)					
3rd	19	1.58	0.507		
4th	15	1.93	0.258	1.99	.1496
5th	23	1.83	0.388		
At-Risk Status (C)					
Regular Education	36	1.81	0.401		
Title 1/ Tutor	12	1.58	0.515	0.98	.3842
Special Education	9	1.89	0.333		
		Interactions			
		A x B		1.61	.2128
		A x C		1.58	.2174
		B x C		0.91	.4678
		A x B x C		2.98	.0916

(Continued)

Table 5 (Continued)

Variables	n	M*	s	F values	p levels
		Read With a Group of Students and an Adult			
Gender (A)					
Male	33	1.42	0.502	0.14	.7135
Female	24	1.58	0.504		
Grade Level (B)					
3rd	19	1.63	0.496		
4th	15	1.47	0.516	0.25	.7832
5th	23	1.39	0.499		
At-Risk Status (C)					
Regular Education	36	1.47	0.506		
Title 1/ Tutor	12	1.58	0.515	1.22	.3064
Special Education	9	1.44	0.527		
			Interactions		
		A x B		0.63	.5379
		A x C		1.67	.1997
		B x C		1.64	.1833
		A x B x C		0.06	.8017

(Continued)

Table 5 (Continued)

Variables	n	M*	s	F values	p levels
		Read With One Student			
Gender (A)					
Male	33	1.76	0.435	0.21	.6471
Female	24	1.87	0.338		
Grade Level (B)					
3rd	19	1.95	0.229		
4th	15	1.80	0.414	1.46	.2445
5th	23	1.70	0.470		
At-Risk Status (C)					
Regular Education	36	1.78	0.422		
Title 1/ Tutor	12	2.00	0.00	2.73	.0768
Special Education	9	1.67	0.500		
		Interactions			
		A x B		0.63	.5351
		A x C		0.18	.8392
		B x C		0.94	.4502
		A x B x C		1.23	.2746

* The larger the value the more positive the attribute.

** The scales had the following possible scores: Read to a Teacher (1 - 2); Read With a Group of Students (1 - 2); Read Alone (1 - 2); Read With a Group of Students and an Adult (1 - 2); and Read With One Student (1 - 2).

None of the 35 *p* values were statistically significant at the .05 level; therefore, the null hypotheses for these comparisons were retained. The results cited in Table 5 indicated no associations between independent and dependent variables. All scores appeared to represent a common population.

Information pertaining to Physical Stimuli (6 scales) was cited in Table 6. The following were presented in Table 6: variables, group sizes, means, standard deviations, *F* values, and *p* levels.

Table 6: A Comparison of Mean Reading Styles Inventory - Intermediate Scores (Physical Stimuli) for 3rd, 4th, and 5th Grade Students According to Gender, Grade Level, and At-Risk Status Employing Three-Way Analysis of Variance (General Linear Model).

Variables	n	M*	s	F values	p levels
			Intake**		
Gender (A)					
Male	33	2.48	0.508	0.60	.4412
Female	24	2.25	0.608		
Grade Level (B)					
3rd	19	2.42	0.507		
4th	15	2.00	0.535	2.35	.1080
5th	23	2.61	0.499		
At-Risk Status (C)					
Regular Education	36	2.31	0.577		
Title 1/ Tutor	12	2.67	0.492	2.48	.0957
Special Education	9	2.33	0.500		
			Interactions		
		A x B		1.59	.2154
		A x C		1.36	.2685
		B x C		0.81	.5277
		A x B x C		0.15	.7007

(Continued)

Table 6 (Continued)

Variables	n	M*	s	F values	p levels
		Reading in the Morning			
Gender (A)					
Male	33	1.30	0.467	0.35	.5555
Female	24	1.42	0.504		
Grade Level (B)					
3rd	19	1.36	0.496		
4th	15	1.40	0.507	0.57	.5674
5th	23	1.30	0.470		
At-Risk Status (C)					
Regular Education	36	1.33	0.478		
Title 1/ Tutor	12	1.33	0.492	0.17	.8449
Special Education	9	1.44	0.527		
		Interactions			
		A x B		0.21	.8135
		A x C		1.29	.2859
		B x C		1.78	.1511
		A x B x C		0.05	.8252

(Continued)

Table 6 (Continued)

Variables	n	M*	s	F values	p levels
		Reading in the Early Afternoon			
Gender (A)					
Male	33	1.70	0.467	0.42	.5194
Female	24	1.71	0.464		
Grade Level (B)					
3rd	19	1.79	0.419		
4th	15	1.67	0.488	0.54	.5843
5th	23	1.65	0.487		
At-Risk Status (C)					
Regular Education	36	1.72	0.454		
Title 1/ Tutor	12	1.50	0.522	0.97	.3871
Special Education	9	1.89	0.333		
		Interactions			
		A x B		0.22	.8042
		A x C		0.44	.6492
		B x C		0.63	.6414
		A x B x C		0.02	.8958

(Continued)

Table 6 (Continued)

Variables	n	M*	s	F values	p levels
		Reading in the Late Afternoon			
Gender (A)					
Male	33	1.45	0.506	0.02	.8961
Female	24	1.54	0.509		
Grade Level (B)					
3rd	19	1.63	0.496		
4th	15	1.53	0.516	0.88	.4241
5th	23	1.35	0.487		
At-Risk Status (C)					
Regular Education	36	1.47	0.506		
Title 1/ Tutor	12	1.42	0.515	1.03	.3661
Special Education	9	1.66	0.500		
		Interactions			
		A x B		0.01	.9928
		A x C		0.40	.6701
		B x C		0.32	.8597
		A x B x C		0.08	.7813

(Continued)

Table 6 (Continued)

Variables	n	M*	s	F values	p levels
		Reading in the Evening			
Gender (A)					
Male	33	1.76	0.435	0.04	.8497
Female	24	1.71	0.464		
Grade Level (B)					
3rd	19	1.53	0.513		
4th	15	1.80	0.414	1.99	.1488
5th	23	1.87	0.344		
At-Risk Status (C)					
Regular Education	36	1.72	0.454		
Title 1/ Tutor	12	1.67	0.492	0.24	.7841
Special Education	9	1.89	0.333		
		Interactions			
		A x B		1.15	.3258
		A x C		0.49	.6141
		B x C		0.76	.5577
		A x B x C		2.20	.1453

(Continued)

Table 6 (Continued)

Variables	n	M*	s	F values	p levels
		Mobility			
Gender (A)					
Male	33	1.88	0.781	3.12	.0846
Female	24	1.67	0.816		
Grade Level (B)					
3rd	19	1.58[d]	0.769		
4th	15	1.60[d]	0.737	6.00	.0051
5th	23	2.09[e]	0.793		
At-Risk Status (C)					
Regular Education	36	1.61	0.688		
Title 1/ Tutor	12	2.33	0.889	0.87	.4280
Special Education	9	1.78	0.833		
		Interactions			
		A x B		3.60	.0362
		A x C		2.84	.0698
		B x C		1.58	.1985
		A x B x C		0.24	.6246

* The larger the value the more positive the attribute.

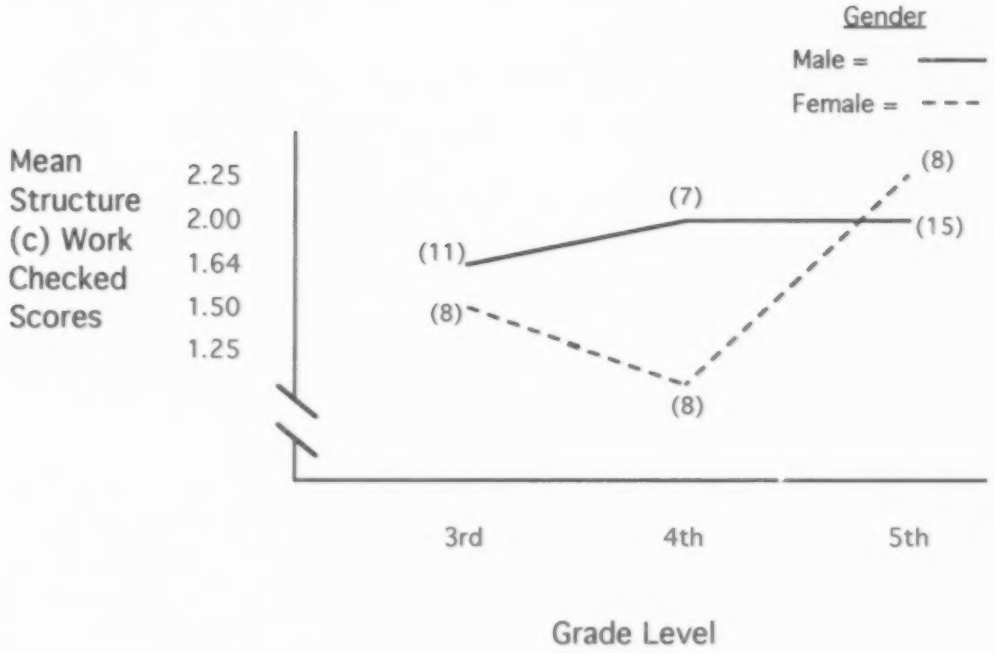
** The scales had the following possible scores: Intake (1 - 3); Reading in the Morning (1 - 2); Reading in the Early Afternoon (1 - 2); Reading in the Late Afternoon (1 - 2); Reading in the Evening (1 - 2); and Mobility (1 - 3).

[de]The difference was statistically significant at the .05 level according to Duncan's multiple range test for means.

Two of the 42 p values were statistically significant at the .05 level; therefore, the null hypotheses for these comparisons were rejected. One of the statistically significant comparisons was for a main effect. The following main effect was statistically significant: the independent variable grade level for the dependent variable Mobility. The information cited in Table 6 indicated the following for the main effect: students in grade 5 had statistically higher mean Mobility score (greater preference for mobility) than those in grades 3 and 4.

One of the 2 significant comparisons was for an interaction. The following interaction was statistically significant: the independent variables gender and grade level for the dependent variable Mobility. The interaction between gender and grade level for the dependent variable Mobility was depicted in a profile plot. Figure 6 contains mean Mobility scores and curves for gender.

Figure 6: The Interaction Between Gender and Grade Level for the Dependent Variable Mobility



The interaction between gender and grade level for the dependent variable Mobility was disordinal. The results cited in Figure 6 indicated the following:

1. females in grade 5 had numerically the highest mean Mobility score (prefer mobility when reading) of any subgroup, and
2. females in grade 4 had numerically the lowest mean Mobility score of any subgroup.

Discussion

Summary

The purpose of the researcher was to investigate the reading styles of third, fourth, and fifth grade students. The independent variables investigated were gender, grade placement, and at-risk status. The dependent variables consisted of compiled scores from The Reading Styles Inventory. The sample was from the elementary school in Windom, Kansas. The sample consisted of 57 participants, 33 males and 24 females. One null hypothesis was tested at the .05 level of significance employing an analysis of variance (general linear model) using a 2X3X3 factorial design.

A total of 224 comparisons were made. Of the 224 comparisons, 96 were main effects and 128 were interactions. Of the 96 main effects, 8 were statistically significant at the .05 level. The following main effects were statistically significant:

1. the independent variable gender for the dependent variable Sound (a) Music,
2. the independent variable at-risk status for the dependent variable Light,
3. the independent variable gender for the dependent variable Structure (a) Choices,
4. the independent variable grade level for the dependent

variable Structure (a) Choices,

5. the independent variable grade level for the dependent variable Structure (b) Directions,
6. the independent variable gender for the dependent variable Structure (c) Work Checked, and
7. the independent variable at-risk status for the dependent variable Structure (d) Work Checked By, and
8. the independent variable grade level for the dependent variable Mobility.

The results of the present study indicated the following for main effects:

1. females reported greater preference for music while reading than males,
2. special education students reported greater preference for bright light when reading than Title 1/tutor students,
3. males reported greater preference for choices of reading material than females,
4. students in grade 4 reported greater preference for choices of reading material than students in grade 3,
5. students in grades 3 and 4 reported greater preference for directions than students in grades 5,
6. males reported greater preference for having work checked

frequently than females,

7. regular education and special education students reported a greater preference for having work checked by peers than students in Title 1/tutor, and
8. students in grade 5 reported a greater preference for mobility than students in grades 3 and 4.

Of the 128 interactions 6 were statistically significant at the .05 level. The following interactions were statistically significant:

1. the independent variables grade level and at-risk status for the dependent variable Light,
2. the independent variables grade level and at-risk status for the dependent variable Adult-Motivated,
3. the independent variables gender and at-risk status for the dependent variable Structure (c) Work Checked,
4. the independent variables gender and grade level for the dependent variable Structure (d) Work Checked By,
5. the independent variables gender and at-risk status for the dependent variable Structure (d) Work Checked By, and
6. the independent variables gender and grade level for the dependent variable Mobility.

Review of the Literature and Results of the Present Study

A consistent finding in the research pertaining to learning

style and reading style was that no one element of learning style appeared to be the contributing factor to improved academic achievement. Improvement in an academic area was rather brought about by matching a student's preference to the instructional mode or environment.

Literature pertaining to the learning style preference of males and females indicated that males tended to prefer more mobility than females (Cohen, 1986 & Yong and McIntyre, 1992). The results of the present study indicated an interaction between gender and grade level for the preference for mobility.

Literature pertaining to reading style preferences of second, fourth, sixth, and eighth graders indicated students in grades 2 and 4 preferred fewer choices of reading material than students in grades 6 and 8 (Carbo, 1983). The results of the present study indicated students in grade 4 reported greater preference for choices of reading material than students in grade 3. This finding was similar to previous results indicating students in higher grades prefer more choices.

Literature pertaining to reading style preferences of students in second, fourth, sixth, and eighth grades indicated students in grade 2 preferred more directions than those in grades 4, 6, and 8 (Carbo, 1983). The results of the present study indicated students

in grades 3 an 4 reported greater preference for directions than students in grade 5. This result supported previous findings by Carbo indicating that students in lower grades prefer more directions than those in higher grades.

Literature pertaining to reading style preferences in second, fourth, sixth, and eighth grades indicated students in grade 2 prefer mobility more than those in grades 4, 6, and 8 (Carbo, 1983). The results of the present study indicated students in grades 3 and 4 reported less preference for mobility than students in grade 5. The results of the present study did not support those of Carbo.

Literature pertaining to learning style preferences of at-risk students indicated that individuals with low-reading achievement tended to prefer a brightly lit environment (Price, Dunn, and Sanders, 1981). The results of the present study indicated that students placed in Title I/tutor program preferred a dimly lit environment. The results of the present study did not support those of Price,Dunn, and Sanders.

Generalizations

The results of the present study appeared to support the following generalizations:

1. female students have greater preference for music while reading than males,

2. male students have a greater preference for choices in reading than females,
3. students in fourth grade have greater preference for directions than students in grade 5,
4. grade level and at-risk status of students should be interpreted concurrently for light preference while reading,
6. grade level and at-risk status of students should be interpreted concurrently for adult-motivated preference,
7. gender and at-risk status for students should be interpreted concurrently for preference in the frequency of work checked,
8. gender and grade level for students should be interpreted concurrently for preference of work checked by whom,
9. gender and at-risk status for students should be interpreted concurrently for preference of work checked by whom, and
10. the gender and grade level for students should be interpreted concurrently for mobility preference.

Recommendations

Results of the present study appeared to support the following recommendations:

1. the study should be replicated utilizing a larger, random sample,

2. the study should be replicated in other geographical areas,
3. the study should be replicated utilizing a larger span of grade levels, and
4. the study should be replicated using a different instrument.

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Appendix A

Letter Requesting Permission to Use the Reading Styles Inventory with Note of Response From Dr. Marie Carbo

8/15/95
You have my permission
Marie Carbo

A. Kay Howie
P.O. Box 232
Little River, KS 67457-0232
August 6, 1995

National Reading Styles Institute
P.O.Box 737
Syosset, N.Y. 11791

Dear Dr. Carbo;

I am Kay Howie and am presently working on a master's program in Elementary Counseling at Fort Hays State University. As partial requirement for the degree I am writing a thesis on learning styles of elementary students.

I am requesting permission to use the Reading Style Inventory, Primary Version and Reading Style Inventory Intermediate. The school district I work for has purchased the inventories this past year. I will be using students in the district as subjects in the study. In order to obtain a large enough sample for the study, I may need to administer to students in a nearby school, also.

For the purpose of my study I will be administering the appropriate instrument to students in first, third, and fifth grades. The responses from the inventory will be used as the dependent variables in my study and the independent variables used will be gender, grade level and possibly age. Through my research I hope to discover if there are any tendencies towards particular learning styles based upon age, grade or gender.

I am also seeking research based information and research based articles on learning styles. If your organization could provide me with sources of other studies on learning styles or the studies themselves, the help would be greatly appreciated. I am finding much written on learning styles and the benefits of teaching students through their modalities but little research based information.

Thank you for your assistance. I look forward to your response.

Sincerely,

Kay Howie

A. Kay Howie

Appendix B

Letter of Permission to Mr. Harold Schrag

A. Kay Howie
P.O. Box 232
Little River, KS 67457

Mr. Harold Schrag, Principal
Windom Elementary School
P.O. Box 67
Windom, KS 67491

Dear Mr. Schrag,

I am presently working on a Master's Degree Program in Counseling at Fort Hays State University. As partial requirement for the program I am writing a thesis on Learning Styles of elementary students. My plans are to study the Reading Styles of students in first, third and fifth grades.

With your permission, I would like to use the students at your school. I will be using the Reading Styles Inventory® which has been utilized by your teachers in the past. The individual student's responses will be completely confidential.

Please respond in written form, your response to my request as soon as possible.

Thank you for your cooperation. Through this study I hope to learn if the differences in reading styles exist between the various grades.

Sincerely,

A. Kay Howie
Counselor, Graduate Student

Appendix C

Letter of Response from Mr. Harold Schrag

WINDOM ELEMENTARY SCHOOL

Learning Here, There, and Everywhere

UNIFIED SCHOOL DISTRICT 444

101 E. OLIVE AVENUE, BOX 67
WINDOM, KANSAS 67491
PHONE (316) 489-6241

DARREL KELLERMAN, SUPERINTENDENT
HARRY SCHRAG, PRINCIPAL
SHANE CORDELL, COUNSELOR

October 10, 1995

A. Kay Howie
P.O. Box 232
Little River, KS 67457

Dear Mrs. Howie,

In response to your request to using the learning styles data of our students in your thesis work, we would be most happy to have you do this study. Perhaps your study will help us recognize new ways to approach the teaching/learning process with students. We look forward to your involvement and to your sharing the results of the study.

Sincerely,

Harry Schrag

Harry Schrag

Appendix D

Demographic Data Sheet

Demographic Data Sheet

Name _____

Male _____ Female _____ Grade _____

At-Risk Status: 1) Regular education, no support _____

2) Regular education, Title I or tutor support _____

3) Special education, resource room support _____

Appendix E

Instructions

Instructions

I am currently working on a thesis regarding the reading styles of elementary students. In order to collect data, I would like your help in completing the Reading Styles Inventory. The information which you give will not be identified with you in any way in the thesis. The inventory will be about you and your preferences while reading. There are no right or wrong answers so choose the choice which fits you best. If you have a question or need help with a word, please raise your hand and I will respond. When you are finished, raise your hand and I will pick them up. Thank you for your participation.